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**UTILITY PATENT APPLICATION TRANSMITTAL
(Large Entity)**

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Docket No.
13768.173

Total Pages in this Submission 5

TO THE ASSISTANT COMMISSIONER FOR PATENTS

**Box Patent Application
Washington, D.C. 20231**

Transmitted herewith for filing under 35 U.S.C. 111(a) and 37 C.F.R. 1.53(b) is a new utility patent application for invention entitled:

METHODS AND SYSTEMS FOR ALLOWING THIRD PARTY CLIENT APPLICATIONS TO INFLUENCE IMPLEMENTATION OF HIGH-LEVEL DOCUMENT COMMANDS

and invented by:

Jon B. Avner and Soner F. Terek

If a **CONTINUATION APPLICATION**, check appropriate box and supply the requisite information:

Continuation Divisional Continuation-in-part (CIP) of prior application No.:

Which is a:

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Enclosed are:

Application Elements

□ 1. Filing fee as calculated and transmitted as described below

2. Specification having 29 pages and including the following:

- a. Descriptive Title of the Invention
- b. Cross References to Related Applications (*if applicable*)
- c. Statement Regarding Federally-sponsored Research/Development (*if applicable*)
- d. Reference to Microfiche Appendix (*if applicable*)
- e. Background of the Invention
- f. Brief Summary of the Invention
- g. Brief Description of the Drawings (*if drawings filed*)
- h. Detailed Description
- i. Claim(s) as Classified Below
- j. Abstract of the Disclosure

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5

Application Elements (Continued)

3. Drawing(s) (when necessary as prescribed by 35 USC 113)
 - a. Formal Number of Sheets 4
 - b. Informal Number of Sheets _____
4. Oath or Declaration
 - a. Newly executed (*original or copy*) Unexecuted
 - b. Copy from a prior application (37 CFR 1.63(d)) (*for continuation/divisional application only*)
 - c. With Power of Attorney Without Power of Attorney
 - d. **DELETION OF INVENTOR(S)**
Signed statement attached deleting inventor(s) named in the prior application, see 37 C.F.R. 1.63(d)(2) and 1.33(b).
5. Incorporation By Reference (*usable if Box 4b is checked*)
The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.
6. Computer Program in Microfiche (*Appendix*)
7. Nucleotide and/or Amino Acid Sequence Submission (*if applicable, all must be included*)
 - a. Paper Copy
 - b. Computer Readable Copy (*identical to computer copy*)
 - c. Statement Verifying Identical Paper and Computer Readable Copy

Accompanying Application Parts

8. Assignment Papers (*cover sheet & document(s)*)
9. 37 CFR 3.73(B) Statement (*when there is an assignee*)
10. English Translation Document (*if applicable*)
11. Information Disclosure Statement/PTO-1449 Copies of IDS Citations
12. Preliminary Amendment
13. Acknowledgment postcard
14. Certificate of Mailing

First Class Express Mail (*Specify Label No.*): EL 550 340 306 US

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Accompanying Application Parts (Continued)

15. Certified Copy of Priority Document(s) *(if foreign priority is claimed)*

16. Additional Enclosures *(please identify below):*

Attached sheet with correspondence address

Request That Application Not Be Published Pursuant To 35 U.S.C. 122(b)(2)

17. Pursuant to 35 U.S.C. 122(b)(2), Applicant hereby requests that this patent application not be published pursuant to 35 U.S.C. 122(b)(1). Applicant hereby certifies that the invention disclosed in this application has not and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication of applications 18 months after filing of the application.

Warning

An applicant who makes a request not to publish, but who subsequently files in a foreign country or under a multilateral international agreement specified in 35 U.S.C. 122(b)(2)(B)(i), must notify the Director of such filing not later than 45 days after the date of the filing of such foreign or international application. A failure of the applicant to provide such notice within the prescribed period shall result in the application being regarded as abandoned, unless it is shown to the satisfaction of the Director that the delay in submitting the notice was unintentional.

UTILITY PATENT APPLICATION TRANSMITTAL
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5

Fee Calculation and Transmittal

CLAIMS AS FILED

For	#Filed	#Allowed	#Extra	Rate	Fee
Total Claims	26	- 20 =	6	x \$18.00	\$108.00
Indep. Claims	5	- 3 =	2	x \$80.00	\$160.00
Multiple Dependent Claims (check if applicable)					\$0.00
				BASIC FEE	\$710.00
OTHER FEE (specify purpose)					\$0.00
				TOTAL FILING FEE	\$978.00

A check in the amount of **\$978.00** to cover the filing fee is enclosed.

The Commissioner is hereby authorized to charge and credit Deposit Account No. **23-3178** as described below. A duplicate copy of this sheet is enclosed.

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Signature

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PATENT TRADEMARK OFFICE

Dated:

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All correspondence and telephonic communications relating to this patent application should be directed to:

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CERTIFICATE OF MAILING BY EXPRESS MAIL

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Date of Deposit: October 4, 2000

I hereby certify that the enclosed Transmittal Letter (5 pgs. in triplicate); Patent Application (29 pgs); 4 Sheets of Formal Drawings; Declaration, Power of Attorney, & Petition (2pgs); Assignment with Cover Sheet (3 pgs) and Check No. 117863 for \$978.00 for filing in the matter of the Application of MICROSOFT CORPORATION for, "METHODS AND SYSTEMS FOR ALLOWING THIRD PARTY CLIENT APPLICATIONS TO INFLUENCE IMPLEMENTATION OF HIGH-LEVEL DOCUMENT COMMANDS ", is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. § 1.10 on the date indicated above in an envelope addressed to the United States Commissioner of Patents and Trademarks, Washington, D.C. 20231, Box: Patent Application.

Respectfully submitted this 4th day of October 2000.

Dolly Homme
Dolly Homme

Attorney Docket: 13768.173

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UNITED STATES PATENT APPLICATION

of

Jon Avner

and

Soner Terek

for

**METHODS AND SYSTEMS FOR
ALLOWING THIRD PARTY CLIENT APPLICATIONS TO INFLUENCE
IMPLEMENTATION OF HIGH-LEVEL DOCUMENT COMMANDS**

BACKGROUND OF THE INVENTION

1. The Field of the Invention

The present invention relates to the field of database management systems. In particular, the present invention relates to methods and systems for allowing third party client applications to have influence on how high-level document commands are implemented in a database.

2. The Prior State of the Art

With the development of computer networks and the Internet, anyone who has access to an Internet capable computer may access information from all over the world. The present era has even been termed the “information age” due to the widespread abundance of information. Although this abundance of information is useful, individuals may easily be overwhelmed with information to the point where it is difficult to filter out relevant information from irrelevant information.

Database management systems are systems that manage collections of data (i.e., databases) so as to allow individuals, devices and applications to easily access, manage, and update information. Thus, database management systems provide a significant contribution to the information age by allowing for the efficient use of information.

Conventional database management systems such as the database management system 100 shown in Figure 1 include an underlying database 110 that contains organized data in the form of a number of tables such as table “A”, table “B”, table “C” and table “D”. Each table contains entries that associate documents with property of the documents. For example, one table may contain a count of the number of files within given folders, another may list the memory size of given files, yet another may list other properties

1 associated with given files, or folders. For each document, there is typically more than one
2 table that may be associated with the document by, for example, describing properties of the
3 document.

4 A document (e.g., document 1, 2, 3 and 4 in Figure 1) is an identifiable entity from
5 the viewpoint of applications that use the database management system. For example, a
6 folder or an item such as an electronic mail message within the folder may be considered to
7 be a document since they are identified as entities from the viewpoint of the application
8 that uses the database management system. For example, in the context of electronic
9 messaging, an application may present folders such as “in-boxes” and “out-boxes” to a
10 user with corresponding electronic mail messages in the folders. These folders and
11 electronic mail messages are “documents” from the viewpoint of the application.
12 Similarly, files and directories within a file system may also be documents from the
13 viewpoint of the application that uses the database management system. The tables within
14 the underlying database are not considered to be documents since they are identified
15 internal to the database management system, and not at the higher level of the application
16 that uses the database management system.

17 The database application 120 generates high-level document commands (e.g., high-
18 level command 121) that relate to operations to be performed on a document. Examples of
19 such document commands might include operations such as, for example, move folder,
20 move message, delete message, copy folder, copy file, and so forth.

21 Each of these high-level document commands is received by the database engine
22 130 which implements the high-level document commands by executing a number of table
23 level commands that result in database tables being updated. Typically, the database
24 engine would use the disk access module 140 of an operating system to produce the

1 physical control signals necessary to read and write the appropriate sectors in the disk,
2 each table comprising one or more possibly discontiguous sectors on the disk.

3 Once the high-level document command is implemented, the database management
4 system may notify other client applications using notification module 150 that the high-
5 level document command was implemented. Then, the other client applications may
6 perform a variety of processes in response to that notification. For example, if a new
7 electronic mail messages is added into a public folder, the other client applications that
8 have subscribed to that public folder may receive notification of the new electronic mail
9 message so that they can update there local database to reflect the change, or perhaps
10 refresh the screen if it is currently displaying the contents of the public folder.

11 In the conventional method, the notification is only dispatched after the high-level
12 document command is implemented. There is nothing the client application can do to
13 affect how the high-level document command is implemented, what additional actions are
14 to be taken in the database at the same time the high-level document command is
15 implemented, or whether the high-level document command is to be implemented at all.
16 Therefore, what are desired are methods and systems for allowing more flexibility for a
17 third party client application to affect how a high-level document command is
18 implemented in a database.

SUMMARY OF THE INVENTION

The principles of the present invention provide for a way for third party client applications to influence how a high-level document command is implemented by a database management system. The database management system is issued a number of high level-document commands which are intended to be implemented in the underlying database. Such high-level document commands include high-level commands that relate to actions to be taken on documents such as folders, files, messages and other entities that are identified at the level of the application that uses the database management system. For example, in electronic messaging applications, one high-level document command may be to add a mail message to a folder.

Unlike conventional database management systems, however, the database management system in accordance with the invention temporarily foregoes implementing the high-level document command in the database. Instead, the database management system identifies any third party client applications that are to be notified when the high-level document command is received. Then, the database management system dispatches a notification. The client application is thus made aware of the notification so that the client application may return back implementation instructions on how to implement the high-level document command. The database management system receives the implementation instructions and follows the instructions in implementing the high-level document command.

For example, the instruction may be for preventing the implementation of the high-level document command altogether. The instruction may also be to change how the high-level document command is implemented. The instruction may even be for implementing one or more high-level document commands in addition to the received high-level

1 document command. Thus, the notified third party client application is given extensive
2 control over how the high-level document command is implemented.

3 Additional features and advantages of the invention will be set forth in the
4 description which follows, and in part will be obvious from the description, or may be
5 learned by the practice of the invention. The features and advantages of the invention may
6 be realized and obtained by means of the instruments and combinations particularly
7 pointed out in the appended claims. These and other features of the present invention will
8 become more fully apparent from the following description and appended claims, or may
9 be learned by the practice of the invention as set forth hereinafter.

BRIEF DESCRIPTION OF THE DRAWINGS

In order to describe the manner in which the above-recited and other advantages and features of the invention can be obtained, a more particular description of the invention briefly described above will be rendered by reference to specific embodiments thereof which are illustrated in the appended drawings. Understanding that these drawings depict only typical embodiments of the invention and are not therefore to be considered to be limiting of its scope, the invention will be described and explained with additional specificity and detail through the use of the accompanying drawings in which:

Figure 1 illustrates a hierarchical view of a database management system in accordance with the prior art;

Figure 2 illustrates an exemplary system that provides a suitable operating environment for the present invention;

Figure 3 illustrates a hierarchical view of a database management system in accordance with the present invention; and

Figure 4 illustrates a flowchart of a method for allowing a third party client application to influence how a high-level document command is implemented in the database of Figure 3.

DETAILED DESCRIPTION OF THE INVENTION

2 The present invention extends to both methods and systems for allowing a third
3 party client application to influence how a high-level document command is implemented
4 in a database. Appropriate third party client applications are notified when particular high-
5 level document commands are received in the database management system. However,
6 before implementing the high-level document command in the database, the database
7 management system awaits for any instructions from the appropriate third party application
8 on how the high-level document command is to be implemented.

9 If there are no such intervening instructions, the high-level document command is
10 implemented in the database. If there are such intervening instructions, these intervening
11 instructions from the third party client applications are considered in how the high-level
12 document command is implemented. For example, the intervening instruction may be to
13 prevent the implementation of the high-level document command entirely. It may also be
14 to alter the way that the high-level document command is implemented. A third party
15 client application may also have the database management system perform high-level
16 document commands in addition to the original high-level document command. When
17 performing additional high-level operations, all of the high-level operations may be
18 performed atomically in a single group operation so that either all of the high-level
19 operations in the group operation are performed, or none are performed at all.

20 The embodiments of the present invention may comprise a special purpose or
21 general purpose computer including various computer hardware, as discussed in greater
22 detail below. Embodiments within the scope of the present invention also include
23 computer-readable media for carrying or having computer-executable instructions or data
24 structures stored thereon. Such computer-readable media can be any available media

1 which can be accessed by a general purpose or special purpose computer. By way of
2 example, and not limitation, such computer-readable media can comprise physical storage
3 media such as RAM, ROM, EEPROM, CD-ROM or other optical disk storage, magnetic
4 disk storage or other magnetic storage devices, or any other medium which can be used to
5 carry or store desired program code means in the form of computer-executable instructions
6 or data structures and which can be accessed by a general purpose or special purpose
7 computer.

8 When information is transferred or provided over a network or another
9 communications connection (either hardwired, wireless, or a combination of hardwired or
10 wireless) to a computer, the computer properly views the connection as a computer-
11 readable medium. Thus, any such a connection is properly termed a computer-readable
12 medium. Combinations of the above should also be included within the scope of
13 computer-readable media. Computer-executable instructions comprise, for example,
14 instructions and data which cause a general purpose computer, special purpose computer,
15 or special purpose processing device to perform a certain function or group of functions.

16 Figure 2 and the following discussion are intended to provide a brief, general
17 description of a suitable computing environment in which the invention may be
18 implemented. Although not required, the invention will be described in the general context
19 of computer-executable instructions, such as program modules, being executed by
20 computers in network environments. Generally, program modules include routines,
21 programs, objects, components, data structures, etc. that perform particular tasks or
22 implement particular abstract data types. Computer-executable instructions, associated
23 data structures, and program modules represent examples of the program code means for
24 executing steps of the methods disclosed herein. The particular sequence of such

1 executable instructions or associated data structures represent examples of corresponding
2 acts for implementing the functions described in such steps.

3 Those skilled in the art will appreciate that the invention may be practiced in
4 network computing environments with many types of computer system configurations,
5 including personal computers, hand-held devices, multi-processor systems,
6 microprocessor-based or programmable consumer electronics, network PCs,
7 minicomputers, mainframe computers, and the like. The invention may also be practiced
8 in distributed computing environments where tasks are performed by local and remote
9 processing devices that are linked (either by hardwired links, wireless links, or by a
10 combination of hardwired or wireless links) through a communications network. In a
11 distributed computing environment, program modules may be located in both local and
12 remote memory storage devices.

13 With reference to Figure 2, an exemplary system for implementing the invention
14 includes a general purpose computing device in the form of a conventional computer 220,
15 including a processing unit 221, a system memory 222, and a system bus 223 that couples
16 various system components including the system memory 222 to the processing unit 221.
17 The system bus 223 may be any of several types of bus structures including a memory bus
18 or memory controller, a peripheral bus, and a local bus using any of a variety of bus
19 architectures. The system memory includes read only memory (ROM) 224 and random
20 access memory (RAM) 225. A basic input/output system (BIOS) 226, containing the basic
21 routines that help transfer information between elements within the computer 220, such as
22 during start-up, may be stored in ROM 224.

23 The computer 220 may also include a magnetic hard disk drive 227 for reading
24 from and writing to a magnetic hard disk 239, a magnetic disk drive 228 for reading from

1 or writing to a removable magnetic disk 229, and an optical disk drive 230 for reading
2 from or writing to removable optical disk 231 such as a CD-ROM or other optical media.
3 The magnetic hard disk drive 227, magnetic disk drive 228, and optical disk drive 230 are
4 connected to the system bus 223 by a hard disk drive interface 232, a magnetic disk drive-
5 interface 233, and an optical drive interface 234, respectively. The drives and their
6 associated computer-readable media provide nonvolatile storage of computer-executable
7 instructions, data structures, program modules and other data for the computer 220.
8 Although the exemplary environment described herein employs a magnetic hard disk 239,
9 a removable magnetic disk 229 and a removable optical disk 231, other types of computer
10 readable media for storing data can be used, including magnetic cassettes, flash memory
11 cards, digital video disks, Bernoulli cartridges, RAMs, ROMs, and the like.

12 Program code means comprising one or more program modules may be stored on
13 the hard disk 239, magnetic disk 229, optical disk 231, ROM 224 or RAM 225, including
14 an operating system 235, one or more application programs 236, other program modules
15 237, and program data 238. A user may enter commands and information into the
16 computer 220 through keyboard 240, pointing device 242, or other input devices (not
17 shown), such as a microphone, joy stick, game pad, satellite dish, scanner, or the like.
18 These and other input devices are often connected to the processing unit 221 through a
19 serial port interface 246 coupled to system bus 223. Alternatively, the input devices may
20 be connected by other interfaces, such as a parallel port, a game port or a universal serial
21 bus (USB). A monitor 247 or another display device is also connected to system bus 223
22 via an interface, such as video adapter 248. In addition to the monitor, personal computers
23 typically include other peripheral output devices (not shown), such as speakers and
24 printers.

1 The computer 220 may operate in a networked environment using logical
2 connections to one or more remote computers, such as remote computers 249a and 249b.
3 Remote computers 249a and 249b may each be another personal computer, a server, a
4 router, a network PC, a peer device or other common network node, and typically include
5 many or all of the elements described above relative to the computer 220, although only
6 memory storage devices 250a and 250b and their associated application programs 236a and
7 236b have been illustrated in Figure 2. The logical connections depicted in Figure 2
8 include a local area network (LAN) 251 and a wide area network (WAN) 252 that are
9 presented here by way of example and not limitation. Such networking environments are
10 commonplace in office-wide or enterprise-wide computer networks, intranets and the
11 Internet.

12 When used in a LAN networking environment, the computer 220 is connected to
13 the local network 251 through a network interface or adapter 253. When used in a WAN
14 networking environment, the computer 220 may include a modem 254, a wireless link, or
15 other means for establishing communications over the wide area network 252, such as the
16 Internet. The modem 254, which may be internal or external, is connected to the system
17 bus 223 via the serial port interface 246. In a networked environment, program modules
18 depicted relative to the computer 220, or portions thereof, may be stored in the remote
19 memory storage device. It will be appreciated that the network connections shown are
20 exemplary and other means of establishing communications over wide area network 252
21 may be used.

22 Figure 3 illustrates a database management system 300 in accordance with the
23 present invention. Although, not required, the database management system 300 may be
24 implemented in the computing environment shown in Figure 2. The database application

1 320 issues high-level document commands such as command 321. The document
2 command may be, for example, to move, update, copy, add, or delete the document. For
3 each high-level document command, the database management system 300 notifies, via
4 notification module 350, the appropriate client applications(s).

5 However, in contrast to the prior art database management system, the database
6 management system 300 includes a means for allowing one or more client applications to
7 affect how the received high-level document is to be implemented, if at all, in the database.
8 This means is illustrated in Figure 3 as the instruction receiver module 360 which may be
9 implemented by software, hardware, or a combination of software and hardware. The
10 instruction receiver module may be implemented separately or perhaps by the database
11 engine 330, the database application 320, another component of the database management
12 system, or a combination thereof.

13 Figure 4 illustrates a flowchart of a method 400 for allowing third party
14 applications to influence the implementation of a high-level document commands in a
15 database. Acts implemented by the database management system are listed under the
16 column entitled “DATABASE MANAGEMENT SYSTEM” while those act performed by
17 the client application are listed under the column entitled “CLIENT APPLICATION.”

18 The method is initiated by the database management system receiving a high-level
19 document command (act 401). The command is high-level in the sense that the command
20 is for an operation to be performed on a document. The document is an entity such as an
21 electronic mail message or a folder, which is identifiable at the high-level of the client
22 application that is using the database management system. Such high-level applications
23 typically have no knowledge of the tables in the database or how such tables would be
24

1 altered to implement the high-level document command. Thus, tables in databases are not
2 considered to be “documents” in this description and in the claims.

3 After the database management system receives the high-level command, but
4 before implementing the high-level command, the database management system allows
5 third party client applications to affect how the high-level document command is
6 implemented in the database. Accordingly, embodiments within the scope of the present
7 invention include the database management system implementing a step for allowing one
8 or more client applications to affect how the high-level document command is
9 implemented, if at all (step 402). In the example shown in Figure 4, this step includes acts
10 403, 404, 407 and 408.

11 For the received high-level document command, the database management system
12 identifies any client applications that are to be notified when the database management
13 system receives the high-level document command (act 403). These client applications
14 may be identified by being client applications that are notified by default when the
15 database management system receives a high-level document command meeting specified
16 criteria. Alternatively or in addition, client applications may be identified by having a
17 subscription for notifications to occur when the database management system receives
18 high-level document commands meeting specified criteria.

19 Once identified, the client applications are notified of the receipt of the high-level
20 document command (act 404). This may be performed via messaging over a network if the
21 database management system and the client application are located on different machines.
22 Also, this may be performed by the notification being passed through a function call as
23 when the database management system and the client application are located on the same
24 machine.

1 The client application then receives the notification (act 405) and then dispatches
2 instructions back to the database management system (act 406) on how to implement the
3 high-level document command. For example, the client application may instruct the
4 prevention of the implementation altogether, or perhaps how the high-level document
5 command is implemented, or perhaps even what additional high-level document
6 commands are to perform in addition to the received high-level document command. The
7 database management system then receives these implementation instructions (act 407) and
8 then follows the instructions when actually implementing the high-level document
9 command (act 408).

10 The implementation instruction may be prevented from being implemented
11 altogether if so instructed. For example, suppose that a client application is to be notified
12 when a high-level document command is received that is for adding a new electronic mail
13 message into an electronic inbox, the electronic mail message containing certain offensive
14 words. Now suppose that such a high-level document command is, in fact, received at the
15 database management system. The client application will thus be notified. The client
16 application may dispatch instructions to prevent the high-level document command from
17 being implemented at all. The user may have configured the client application to so
18 instruct the database management system to prevent implementation in this case so as to
19 avoid having to encounter offensive words.

20 The implementation instruction may be for changing the way that the high-level
21 document command is implemented. For example, instead of preventing the addition of
22 electronic mail messages that contain certain offensive words, the user may have
23 configured the client application to instruct the database management system to type over

24

1 the offensive words with random alphanumeric text before adding the electronic mail
2 message into the inbox.

3 The implementation instruction may also be to perform one or more high-level
4 document commands in addition to the received high-level document command. For
5 example, the user may configure the client application to instruct the database management
6 system so that any electronic mail message being marked as “urgent” are not only added to
7 the user’s inbox, but also are copied to the in-box of the user’s staff, and the in-box of the
8 user’s supervisor as well.

9 When performing additional high-level document commands over and above the
10 received high-level document commands, the document commands may be implemented
11 as a “group operation” in which all of the document commands are implemented in a
12 single transaction, all of the high-level document command being implemented, or none at
13 all. Group operations are described in co-pending United States application serial number
14 [NOT YET ASSIGNED – ATTORNEY DOCKET NUMBER 13768.171], filed on the
15 same date herewith, and entitled “METHODS AND SYSTEMS FOR PERFORMING
16 HIGH-LEVEL GROUP OPERATIONS IN A DATABASE MANAGEMENT SYSTEM”,
17 which is incorporated herein by reference in its entirety.

18 As described above, the principles of the present invention allow for third party
19 client applications to influence how a high-level document command is to be implemented.
20 This give more control to client applications that desire to tailor how certain high-level
21 document commands are to be implemented.

22 The present invention may be embodied in other specific forms without departing
23 from its spirit or essential characteristics. The described embodiments are to be considered
24 in all respects only as illustrative and not restrictive. The scope of the invention is,

1 therefore, indicated by the appended claims rather than by the foregoing description. All
2 changes which come within the meaning and range of equivalency of the claims are to be
3 embraced within their scope.

4 What is claimed and desired to be secured by United States Letters Patent is:

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WORKMAN, NYDEGGER & SEELEY
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SALT LAKE CITY, UTAH 84111

1 1. In a database management system that includes a database engine that
2 accesses and updates objects in a database, the database engine receiving high-level
3 document commands, each high-level document command for performing an operation on
4 a document that is associated with a plurality of tables in the database, a method for
5 allowing client applications to control how a particular high-level document command is
6 implemented in the database, the method comprising the following:

7 an act of receiving a high-level document command meeting certain criteria;

8 an act of identifying one or more client applications that are to be notified
9 of the implementation of the high-level document command;

10 an act of notifying the one or more identified client applications that a high-
11 level document command meeting the certain criteria has been received;

12 an act of receiving instructions from the one or more client applications on
13 how to affect the implementation of the high-level document command in the
14 database; and

15 an act of following the received instructions when implementing the high-
16 level document command, or not implementing the high-level document command
17 at all if the received instructions so indicate.

18
19 2. The method in accordance with Claim 1, wherein the received instructions
20 are for performing additional high-level document commands in addition to the received
21 high-level document command.

1 3. The method in accordance with Claim 2, wherein the additional high-level
2 document commands and the received high-level document command are implemented
3 atomically in the database.

4

5 4. The method in accordance with Claim 3, wherein the additional high-level
6 document command and the received high-level document command are implemented
7 atomically using a group operation.

8

9 5. The method in accordance with Claim 1, wherein the received instructions
10 are for changing how the high-level document command is to be implemented in the
11 database.

12

13 6. The method in accordance with Claim 1, wherein the received instructions
14 are for preventing the high-level document command from being implemented at all in the
15 database.

16

17 7. The method in accordance with Claim 1, wherein the high-level document
18 command is for performing an operation on an electronic mail message.

19

20 8. The method in accordance with Claim 1, wherein the high-level document
21 command is for performing an operation on a folder that contains electronic mail
22 messages.

1 9. The method in accordance with Claim 1, wherein the high-level document
2 command is for moving a document.

3

4 10. The method in accordance with Claim 1, wherein the high-level document
5 command is for deleting a document.

6

7 11. The method in accordance with Claim 1, wherein the high-level document
8 command is for copying a document.

9

10 12. The method in accordance with Claim 1, wherein the high-level document
11 command is for updating a document.

12

13 13. The method in accordance with Claim 1, wherein the high-level document
14 command is for adding a document.

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16 14. The method in accordance with Claim 1, wherein the act of notifying the
17 one or more identified client applications comprises an act of transmitting a message to a
18 machine that hosts the client application, the machine that host the client application being
19 different than the machine that hosts the database management system.

20

21 15. The method in accordance with Claim 1, wherein the act of notifying the
22 one or more identified client applications comprises an act of passing the notification
23 through a function call to the identified client application, the client application hosted by

the same machine as at least the portion of the database management system responsible for performing the act of notifying the client applications.

16. The method in accordance with Claim 1, wherein the act of receiving instructions from the one or more client applications occurs prior to the act of receiving the high-level document command.

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1 17. In a database management system that includes a database engine that
2 accesses and updates objects in a database, the database engine receiving high-level
3 document commands, each high-level document command for performing an operation on
4 a document that is associated with a plurality of tables in the database, a method for
5 allowing client applications to control how a particular high-level document command is
6 implemented in the database, the method comprising the following:

9 a step for allowing one or more client applications to affect how the
10 received high-level document command is to be implemented, if at all, in the
11 database.

13 18. The method in accordance with Claim 17, wherein the step for allowing one
14 or more client applications to affect how the received high-level document command is to
15 be implemented comprises the following:

16 an act of identifying one or more client applications that are to be notified
17 of the implementation of the high-level document command;

18 an act of notifying the one or more identified client applications that a high-
19 level document command meeting certain criteria has been received;

20 an act of receiving instructions from the one or more client applications on
21 how to affect the implementation of the high-level document command in the
22 database; and

1 an act of following the received instructions when implementing the high-
2 level document command, or not implementing the high-level document command
3 at all if the received instructions so indicate.

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1 19. A computer program product for use in a database management system that
2 includes a database engine that accesses and updates objects in a database, the database
3 engine receiving high-level document commands, each high-level document command for
4 performing an operation on a document that is associated with a plurality of tables in the
5 database, a computer program product for implementing a method for allowing client
6 applications to control how a particular high-level document command is implemented in
7 the database, the computer-program product comprising a computer-readable medium that
8 contains computer-executable instructions for performing the following:

9 an act of detecting the receipt of a high-level document command meeting
10 certain criteria;

11 an act of identifying one or more client applications that are to be notified
12 of the implementation of the high-level document command;

13 an act of causing the one or more identified client applications to be notified
14 that a high-level document command meeting certain criteria has been received;

15 an act of detecting the receipt of instructions from the one or more client
16 applications on how to affect the implementation of the high-level document
17 command in the database; and

18 an act of following the received instructions when implementing the high-
19 level document command, or not implementing the high-level document command
20 at all if the received instructions so indicate.

22 20. The computer program product in accordance with Claim 19, wherein the
23 computer-executable instructions for performing the act of following the received

1 instructions comprise computer-executable instructions for performing additional high-
2 level document commands in addition to the received high level document command.

3

4 21. The computer program product in accordance with Claim 20, wherein the
5 computer-executable instructions for performing additional high-level document
6 commands comprise computer-executable instructions for atomically implementing the
7 additional high-level document commands and the received high-level document command
8 in the database.

9

10 22. The computer program product in accordance with Claim 19, wherein the
11 computer-executable instructions for performing the act of causing the one or more
12 identified client applications to be notified comprise computer-executable instructions for
13 performing an act of causing a message to be transmitted to a machine that hosts the client
14 application, the machine that host the client application being different than the machine
15 that hosts the database management system.

16

17 23. The computer program product in accordance with Claim 19, wherein the
18 computer-executable instructions for performing the act of causing the one or more
19 identified client applications to be notified comprise computer-executable instructions for
20 performing an act of passing the notification through a function call to the identified client
21 application, the client application hosted by the same machine as the computer-executable
22 instructions for performing the act of causing the one or more identified client applications
23 to be notified.

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1 24. The computer program product in accordance with Claim 19, wherein the
2 computer-readable media comprises one or more physical storage media.
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1 25. A database management system for implementing high-level document
2 commands for performing an operation on a document, each document being associated
3 with a plurality of tables in an underlying database, the database management system
4 comprising:

5 a database application that is configured to send high-level document
6 commands;

7 a notification component that is configured to send a notification to any
8 identified client application when a given high-level document command is
9 received by the database management system;

10 an instruction receiver module that is configured to receive instructions
11 from the notified third party application on how to implement the high-level
12 document command; and

13 a database engine configured to follow the received instructions when
14 implementing the high-level document command.

1 26. In a client computer system that hosts a client application, a method of
2 allowing the client application to influence how a high-level document command is
3 implemented by a database management system in a database, regardless of whether the
4 database is locally or remotely located, the method comprising the following:

5 an act of receiving a notification that a high-level document command
6 meeting certain criteria has been received in the database management system; and
7 an act of dispatching instructions on how to implement the high-level
8 document command.

ABSTRACT OF THE DISCLOSURE

A mechanism is described for allowing third party client applications to affect how high-level document commands are implemented in a database. After a high-level document command meeting certain criteria is received in a database management system, the system identifies one or more third party client application that are to be notified when such high-level document commands are received. The client applications are then notified allowing the client application to return implementation instructions which are used by the database management system in determining how to implement the high-level document command. The instruction may be to prevent implementation altogether, to somehow change the implementation, or even to perform high-level document commands in addition to the original high-level document command.

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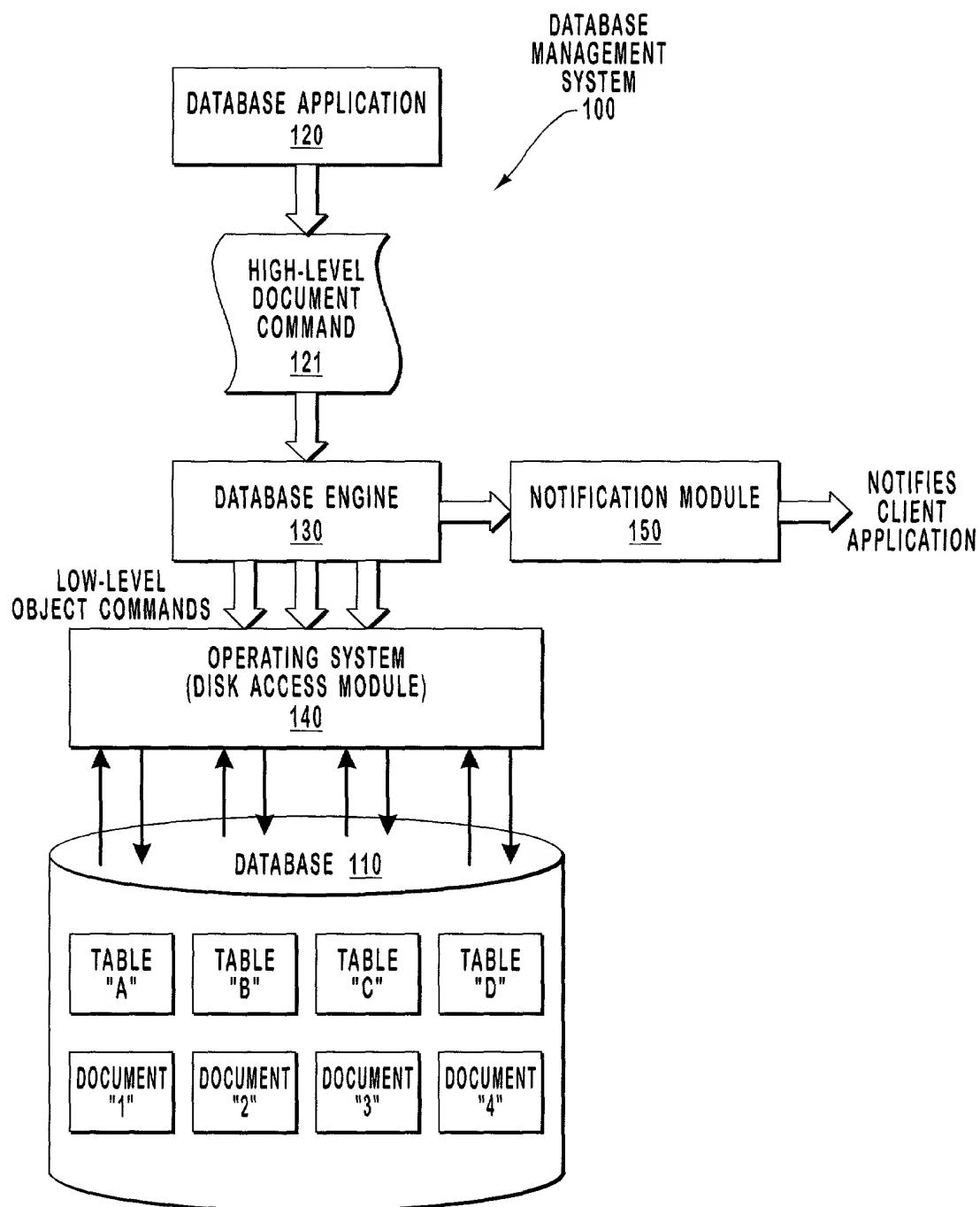
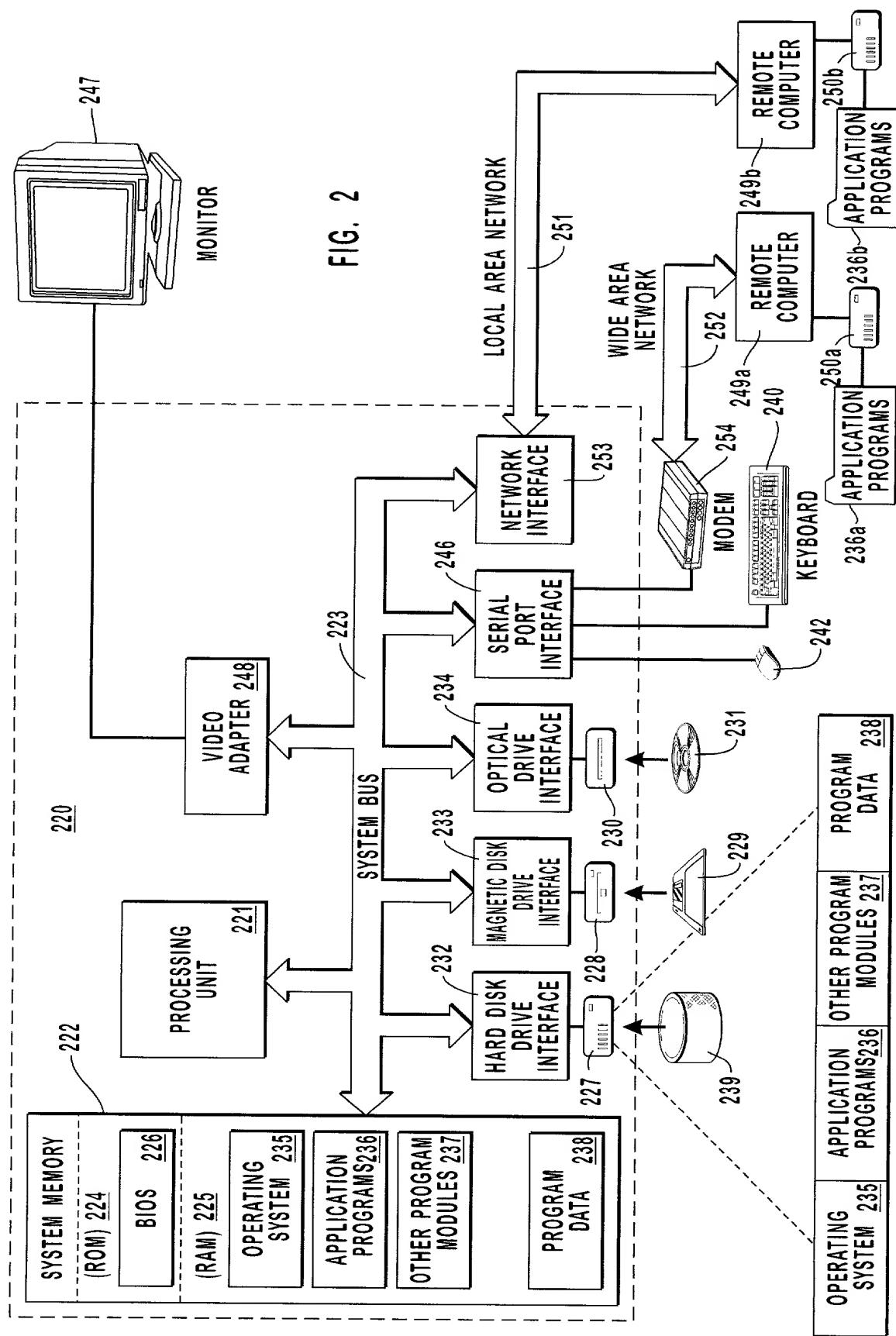


FIG. 1
(PRIOR ART)



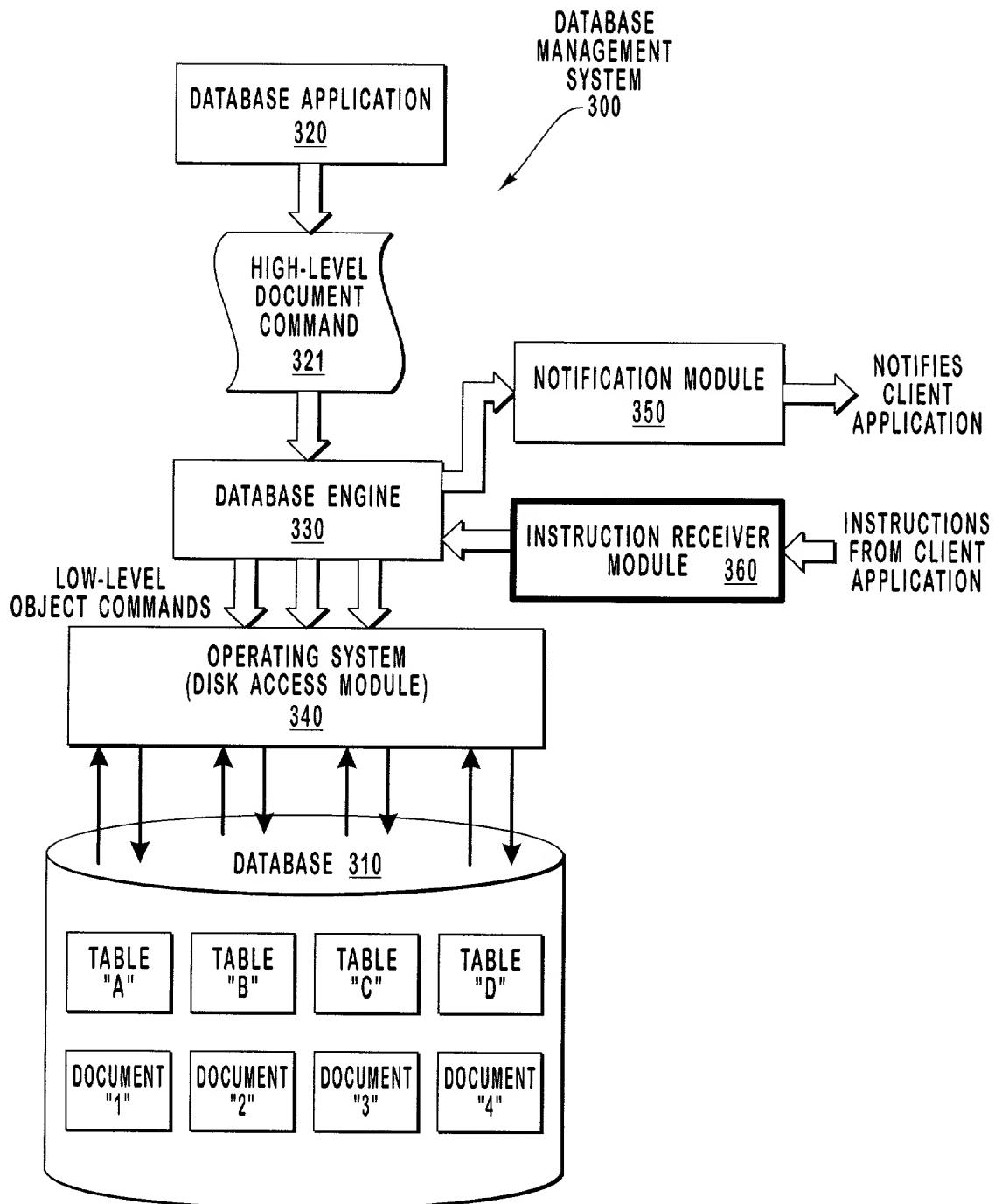


FIG. 3

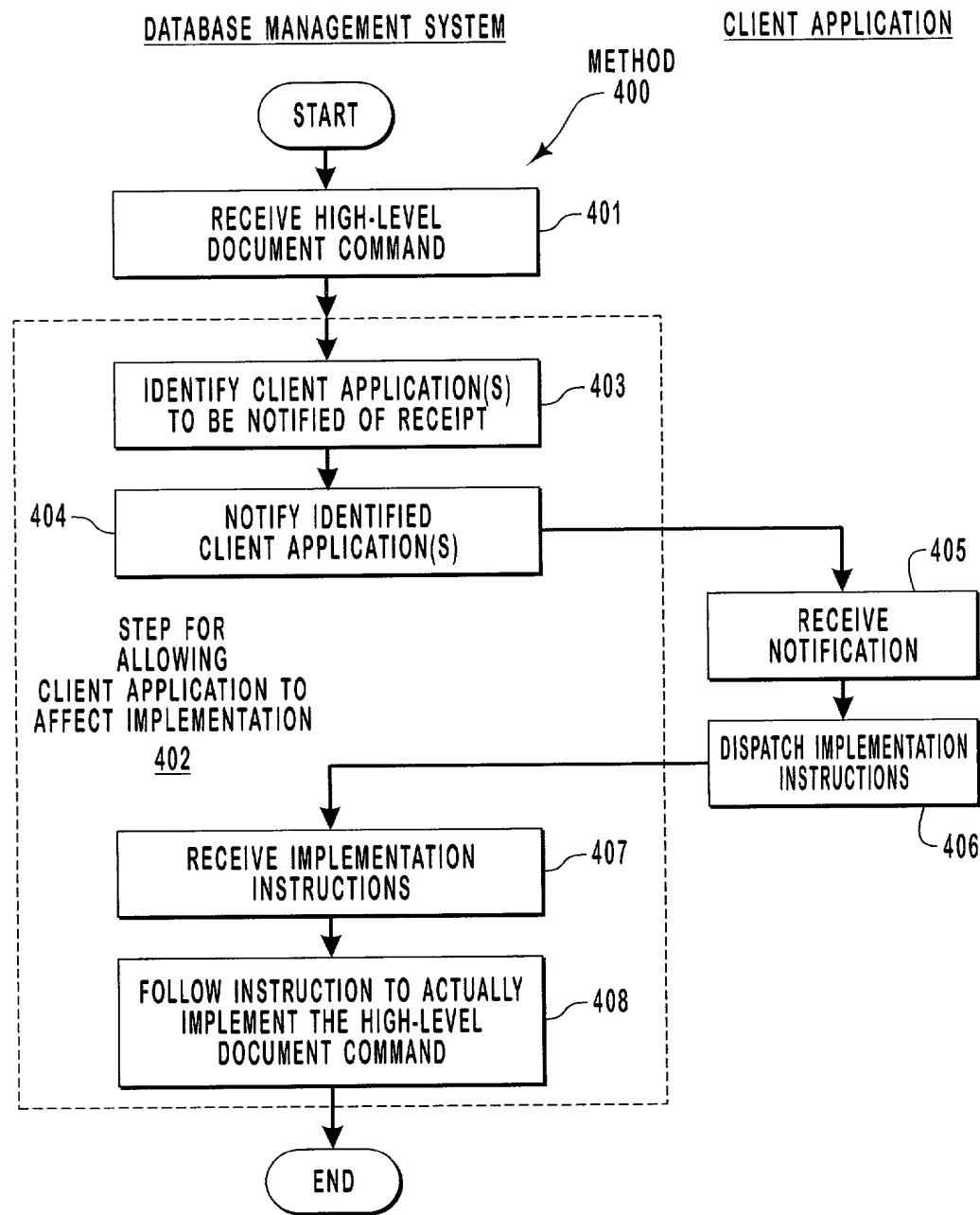


FIG. 4

Express Mailing Label No: EL 550 340 306 US

PATENT APPLICATION
Docket No: 13768.173

DECLARATION, POWER OF ATTORNEY, AND PETITION

I, Jon B. Avner, declare: that I am a citizen of the United States, that my residence and post office address is 17234 SE 40th Place, Bellevue, Washington 98008; and I, Soner F. Terek, declare: that I am a citizen of Turkey, that my residence and post office address is 13695 NE 32nd Place, Bellevue, Washington 98005; that we verily believe we are the original, first, and joint inventors of the subject matter of the invention or discovery entitled "METHODS AND SYSTEMS FOR ALLOWING THIRD PARTY CLIENT APPLICATIONS TO INFLUENCE IMPLEMENTATION OF HIGH-LEVEL DOCUMENT COMMANDS," for which a patent is sought

and which is described and claimed in the specification attached hereto;

and that we acknowledge the duty to disclose information which is material to the examination of this application in accordance with Section 1.56(a) of Title 37 of the Code of Federal Regulations.

We declare further that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful, false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful, false statements may jeopardize the validity of the application or any patent issuing thereon.

We hereby appoint as our attorneys and/or patent agents all listed under Customer No. 022913; and DANIEL D. CROUSE, Registration No. 32,022; and KATIE SAKO, Registration No. 32,628, of MICROSOFT CORPORATION, One Microsoft Way, Redmond, Washington 98052,

with full power to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith. All correspondence and telephonic communications should be directed to:

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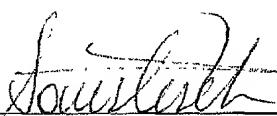
Wherefore, we pray that Letters Patent be granted to us for the invention or discovery described and claimed in the foregoing specification and claims, declaration, power of attorney, and this petition.

Signed at Redmond, Washington this 4 day of October, 2000.

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